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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/695,726	10/23/2000	Shing M. Lee	KLA1P012	2746

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EXAMINER	
FERNANDEZ, KALIMAH	

ART UNIT	PAPER NUMBER
2881	

DATE MAILED: 03/19/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/695,726	LEE, SHING M.	
	Examiner	Art Unit	
	Kalimah Fernandez	2881	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11-26-04*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,4,7-9,11,12,14,16,18,22,23,32,34-41 and 43-48* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *11,12,16,18,23,34,36,45 and 46* is/are allowed.

6)☒ Claim(s) *1,2,4,7-9,22,32,35,37-41,43,44,47 and 48* is/are rejected.

7)☒ Claim(s) *14* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *15 October 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

~~4)☒ Notice of References Cited (PTO-892)~~

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *1-20-04*.

4)☒ Interview Summary (PTO-413) Paper No(s)/Mail Date. *2-9-04*.

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claims 4 and 14 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 4 is depend from the cancelled claim 3. Presumably, it was applicant's intention to have claim 4 depend from claim 2. Similarly, claim 14 is likewise objected to due to its dependence upon cancelled claim 13.

2. Claim 22 recites the limitation "the predicted and the raw data" in a recording step, which depend upon claims 1 and 44. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 112

3. Claims 37-41 and 47-48 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to reasonably convey to one skilled in the

relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The recitation of "the electron having an interaction volume within the sample wherein the interaction volume has a diameter of approximately .5-12 um is not fully disclosed and therefore constitute new matter.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Pat No 4,962,516 issued to Soezima and US Pat No 6,351,516 issued to Mazor et al.

3. Soezima teaches a beam generator configurable to direct a charged particle beam towards the sample (col.1, lines 15-19; col.5, lines 15-18).

4. Soezima teaches the electron beam completely penetrates a sample, the electron beam causing X-rays to emanate from the sample (col.5, lines 19-21).

5. Soezima teaches at least a first and a second wavelength dispersive X-ray detector (col.5, lines 25-30).

6. Soezima teaches the first detector (18) is configured to detect X-rays having certain characteristic emission levels (col.5, lines 30-34). Soezima teaches a second detector (20) is configured to detect X-rays having a different characteristic emission levels from the first detector (18) (col.5, lines 32-34).

7. Soezima does not explicitly teach measuring film stack characteristics of a sample. However, Mazor et al teach measuring a multi-layer film/ film stack and penetration of multi-layers (col.6, lines 55-62).

8. It would have been obvious to an ordinary artisan to combine the teachings of Soezima and Mazor et al, since Mazor et al teaches the ability to inspect the thin film layers during production, thus the advantage of improved efficiency is realized (col.2, lines 5-7).

9. As per claim 2, Soezima teach the detection of X-ray of a specific energy level (col.2, lines 50-60).

10. As per claim 4, Soezima teach a reflective surface (17) and a sensor (18), wherein the reflective surface (17) is configured to direct X-rays of a predetermined energy level to the sensor (18) (col.5, lines 30-44).

11. Claims 7-9, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Soezima and Mazor as applied to claim 1 above, and further in view of US Pat No 5,703,361 issued to Sartore.

12. The obvious combination of Soezima and Mazor has been discusses except for a processor linked to the beam generator and the first detector.

13. Soezima teaches a processor (29) operated to store and analyze detected data.

14. Neither, Soezima and Mazor teach a processor linked to the beam generator and the first detector.

15. However, Sartore teaches a processor (17) linked to the SEM apparatus (15) (i.e. the beam generator) and an X-ray detector (16) to enable an accuracy determination of the X-ray extraction location (see col.3, lines 21-26, lines 38-50).

16. It would have been obvious to an ordinary artisan to incorporate the teachings of Sartore into the obvious combination of Soezima and Mazor.

17. Namely, obvious motivation flows from Sartore's disclosure of advantage of linking the processor to SEM and the detector cited in col.5, lines 7-20. Moreover, Sartore teaches the improved accuracy in image mapping.

18. As per claim 8, Soezima teaches detection of X-rays of specific energy level (col.2, lines 53-60).

19. As per claim 9, Mazor teaches the penetration at least a conductive film layer and a liner film layer of the sample (col.2, lines 4-29).

20. As per claim 32, Mazor teaches each of the characteristic emission levels correspond to a different layer of the film stack (col.6, lines 36-45).

21. As per claim 35, Mazor teaches thickness determinations (col.6, lines 39-41).

22. As per claim 43, Sartore teaches a conductive layer (12) and an insulation layer (13) (i.e., liner layer) (see col.4, lines 53-60).

Allowable Subject Matter

23. Claims 11-12, 16,18, 23, 34,36, and 45-46 are allowed. The following is an examiner's statement of reasons for allowance: The prior art of record fails to teach or obviously suggest the claimed invention.

24. Specifically, no teaching or obvious suggestion was found of the limitation "comparing predicted data derived from one or more equations that model the film stack against raw data" in combination with wavelength

dispersive detection as in claim 11. US Pat No 6,385,281 issued to Ozawa et al teach the use of a predictive equation for modeling spectra but in combination with energy dispersive detection. Namely, Ozawa et al teach the comparison of measured/raw data to predicted data derived from equations (col.2, lines 21-30).

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Response to Arguments

25. Applicant's arguments with respect to claims 1-2,4,7-9,35,37-41,43-44, and 47-48 have been considered but are moot in view of the new ground(s) of rejection. Whereas, the new grounds of rejection were made necessary by applicant's amendment.

Conclusion

26. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE**

FINAL. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

27. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US Pat No 5,877,498 issued to Sugimoto is considered relevant to claim 37 since it teaches the recited interaction range (see col.1, lines 28-30;col.4, lines 48-55).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kalimah Fernandez whose telephone number is 571-272-2470. The examiner can normally be reached on Mon-Tues 6:30-3:30; Wed-Thurs 8-5 and Fri.9am-6 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John R Lee can be reached on 571-272-2477. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Kf

JOHN R. LEE
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